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ASHFORD BOROUGH LOCAL PLAN
Objector Site 941 - Lenacre Hall Farm, Ashford, Kent.

Agricultural Land Classification
ALC Map and Report

October 1997

Resource Planning Team
Eastern Region
FRCA Reading

RPT Job Number: 2001/129/97
FRCA Reference: EL 20/945A

AGRICULTURAL LAND CLASSIFICATION REPORT

ASHFORD BOROUGH LOCAL PLAN
OBJECTOR SITE 941 - LENACRE HALL FARM, ASHFORD, KENT

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey on approximately 12 ha of land between Sandyhurst Lane and Lenacre Street, at Lenacre Hall Farm to the north of Ashford in Kent. The survey was carried out during October 1997.

2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)[1], on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF). The survey was carried out in connection with the Ashford Borough Local Plan. This survey supersedes any previous ALC information for this land.

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey, the majority of agricultural land was in permanent pasture which was being grazed by horses. A small area in the northern most corner of the site was in horticultural use (strawberries). The areas shown as 'Other Land' comprise residential dwellings, farm buildings and a pond.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	3.6	31.3	30.0
3b	7.9	68.7	65.8
Other land	0.5	N/A	4.2
Total surveyed area	11.5	100.0	95.8
Total site area	12.0	-	100.0

[1] FRCA is an executive agency of MAFF and the Welsh Office

7. The fieldwork was conducted at an average density of one boring per hectare. Twelve borings and two soil inspection pits were described.

8. The higher, flatter land along the northern site boundary, together with land in the south of the site, has been classified as Grade 2 (very good quality). Land of this quality occurs in broad conjunction with drift deposits of head and head brickearth. The key limitation is slight soil droughtiness. Soils are deep, well drained and slightly stony loams which given the prevailing climate have slightly reduced reserves of soil moisture. This land may be subject to slightly lower and less consistent crop yields.

9. The majority of agricultural land has been classified as Subgrade 3b (moderate quality) because of significant soil wetness and workability limitations. This land occurs where the underlying Gault Clay gives rise to heavy, poorly drained soils. Poorly structured clay subsoils occur directly below medium and heavy topsoils and act to impede soil drainage. At this locality, such land will have restricted flexibility of cropping, stocking and cultivations.

FACTORS INFLUENCING ALC GRADE

Climate

10. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

11. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values		
Grid reference	N/A	TR 011 460	TR 010 459	TR 009 457
Altitude	m, AOD	80	70	65
Accumulated Temperature	day°C (Jan-June)	1414	1426	1432
Average Annual Rainfall	mm	762	757	754
Field Capacity Days	days	158	158	157
Moisture Deficit, Wheat	mm	111	113	114
Moisture Deficit, Potatoes	mm	105	107	108
Overall climatic grade	N/A	Grade 1	Grade 1	Grade 1

12. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

13. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (AT0, January to June), as a measure of the relative warmth of a locality.

14. The combination of rainfall and accumulated temperature at this site mean that there is no overall climatic limitation. However, climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations. At this locality, the soil moisture deficit values are slightly above average for this region. The likelihood of soil droughtiness problems may therefore be increased. No local climatic factors, such as exposure or frost risk, are believed to adversely affect the land quality on the site. This site is climatically Grade 1.

Site

15. The highest land (approximately 80 m AOD) occurs as a relatively flat strip along the northern site boundary. The site then falls gently, typically in a south-westerly direction, through gradients of 0-4°. The site flattens out again to the lowest point (approximately 65 m AOD) across the southern most field, proximate to Sandyhurst Lane. Nowhere on the site do gradient or microrelief adversely affect agricultural land quality.

Geology and soils

16. The most detailed published geological information for the site (BGS, 1982) shows much of the site to be underlain by Gault Clay. Lower Chalk is mapped on the higher, flatter land along the northern site boundary, with drift deposits of head mapped to the immediate north of the site. The lower, flatter land in the south of the site is shown to be underlain by Folkestone Beds, although drift deposits of head brickearth mask all of the latter plus a small strip of the Gault Clay.

17. The most recent detailed published soil map for this area (SSEW, 1983) maps soils of the Denchworth Association in conjunction with the Gault Clay. These soils are described as 'Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils. Some fine loamy over clayey soils with only slight seasonal waterlogging and some slowly permeable calcareous clayey soils. Landslips and associated irregular terrain locally.' (SSEW, 1983). Soils of the Coombe 2 Association are mapped across the area shown as Lower Chalk. These soils are described as 'Well drained calcareous fine silty soils over chalk or chalk rubble. Shallow soils in places especially on brows and steeper slopes.' (SSEW, 1983). In the extreme south of the site, soils of the Fyfield 2 Association are mapped. Such soils, which in this locality are typically derived from the Folkestone Beds, are described as 'Well drained coarse loamy and sandy soils over sands and sandstones. Some very acid sandy soils with bleached subsurface horizons on heaths and in woodlands. Risk of water erosion.' (SSEW, 1983).

18. Detailed field examination found soils similar to the Denchworth Association across much of the site. Soils thought to be derived from head deposits, rather than the Lower Chalk, were found in the north of the site. In the south of the site, silty soils (from the brickearth deposits) were found proximate to soils similar to those of the Fyfield 2 Association.

AGRICULTURAL LAND CLASSIFICATION

19. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.

20. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II, page 8.

Grade 2

21. The higher, flatter land in the north of the site, together with the lower, flatter land in the south of the site, has been classified as Grade 2 (very good quality). All of this land is limited by minor soil droughtiness. In the north of the site, the soils are derived from drift deposits of head. Here, non-calcareous medium clay loam topsoils overlie similarly textured or heavy clay loam subsoils which are sometimes gleyed below 40 cm depth. These profiles, which are well drained (Wetness Class I), are very slightly stony (containing 3-5% total small flints < 2 cm in size). In the south of the site, the soils are derived from head brickearth and Folkestone Beds. Where the former occur, the profiles comprise medium silty clay loams which extend to at least 120 cm depth. Where the latter occur, medium clay loam topsoils and upper subsoils pass into sandy clay loam and then loamy coarse sand lower subsoils. Again, all of these profiles are well drained (Wetness Class I) and very slightly stony throughout (0-4% total flints). Pit 2 represents such profiles.

22. For all of the different soil types described in paragraph 21, the interaction between soil properties and the relatively dry prevailing local climate means that the profile available water is not quite sufficient to fully meet crop needs. Consequently, there is a minor risk of drought stress for those crops which are grown. This will result in slightly lower yield potential and less consistent crop yields and Grade 2 is appropriate.

Subgrade 3b

23. Approximately two-thirds of the agricultural land on the site has been classified as Subgrade 3b (moderate quality). This land, which occurs in association with the Gault Clay, is subject to significant soil wetness and workability limitations. Topsoils comprise non-calcareous medium and heavy clay loams which tend to directly overlie clay subsoils. Topsoils and subsoils are very slightly stony (containing 0-4% total flints). The clay subsoils are poorly structured, slowly permeable and, as such, result in poor soil drainage (Wetness Class IV). This is evidenced by gleying either from the topsoil or directly below the topsoil. Such profiles are represented by Pit 1.

24. The combination of the poor soil drainage and topsoil textures with the prevailing climatic conditions means that Subgrade 3b is appropriate because of significant restrictions to the flexibility of cropping, stocking and cultivations. It should be noted that the extreme southern extent of this mapping unit incorporates two borings of better quality (Subgrade 3a) which could not be delineated as a separate mapping unit.

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SOURCES OF REFERENCE

British Geological Survey (1982) *Sheet No. 289, Canterbury, 1:50,000 (solid and drift edition).*
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.*
MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 6, 1:250,000 scale, Soils of South East England and accompanying legend.*
SSEW: Harpenden.

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

Grade 1: Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2: Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a: Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b: Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4: Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5: Very Poor Quality Agricultural Land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL DATA

Contents:

SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

Boring Header Information

1. **GRID REF**: national 100 km grid square and 8 figure grid reference.

2. **USE**: Land use at the time of survey. The following abbreviations are used:

ARA:	Arable	**WHT:**	Wheat	**BAR:**	Barley
CER:	Cereals	**OAT:**	Oats	**MZE:**	Maize
OSR:	*Oilseed rape*	**BEN:**	*Field beans*	**BRA:**	*Brassicae*
POT:	Potatoes	**SBT:**	Sugar beet	**FCD:**	Fodder crops
LIN:	Linseed	**FRT:**	Soft and top fruit	**FLW:**	Fallow
PGR:	Permanent pasture	**LEY:**	Ley grass	**RGR:**	Rough grazing
SCR:	Scrub	**CFW:**	Coniferous woodland	**OTH**	Other
DCW:	Deciduous woodland	**BOG:**	Bog or marsh	**SAS:**	Set-Aside
HTH:	Heathland	**HRT:**	Horticultural crops	**PLO:**	Ploughed

3. **GRDNT**: Gradient as estimated or measured by a hand-held optical clinometer.

4. **GLEY/SPL**: *Depth in centimetres (cm) to gleying and/or slowly permeable layers.*

5. **AP (WHEAT/POTS)**: Crop-adjusted available water capacity.

6. **MB (WHEAT/POTS)**: Moisture Balance. (Crop adjusted AP - crop adjusted MD)

7. **DRT**: Best grade according to soil droughtiness.

8. If any of the following factors are considered significant, 'Y' will be entered in the relevant column:

MREL:	Microrelief limitation	**FLOOD:**	Flood risk	**EROSN:**	Soil erosion risk
EXP:	Exposure limitation	**FROST:**	Frost prone	**DIST:**	Disturbed land
CHEM:	Chemical limitation				

9. **LIMIT**: *The main limitation to land quality. The following abbreviations are used:*

OC:	Overall Climate	**AE:**	Aspect	**ST:**	Topsoil Stoniness
FR:	Frost Risk	**GR:**	Gradient	**MR:**	Microrelief
FL:	Flood Risk	**TX:**	Topsoil Texture	**DP:**	Soil Depth
CH:	Chemical	**WE:**	Wetness	**WK:**	Workability
DR:	Drought	**ER:**	Erosion Risk	**WD:**	Soil Wetness/Droughtiness
EX:	Exposure				

Soil Pits and Auger Borings

1. **TEXTURE**: soil texture classes are denoted by the following abbreviations:

S:	Sand	**LS:**	Loamy Sand	**SL:**	Sandy Loam
SZL:	Sandy Silt Loam	**CL:**	Clay Loam	**ZCL:**	Silty Clay Loam
ZL:	Silt Loam	**SCL:**	Sandy Clay Loam	**C:**	Clay
SC:	Sandy Clay	**ZC:**	Silty Clay	**OL:**	Organic Loam
P:	Peat	**SP:**	Sandy Peat	**LP:**	Loamy Peat
PL:	Peaty Loam	**PS:**	Peaty Sand	**MZ:**	Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

F: Fine (more than 66% of the sand less than 0.2mm)
M: Medium (less than 66% fine sand and less than 33% coarse sand)
C: Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content:
M: Medium (<27% clay) **H:** Heavy (27-35% clay)

2. **MOTTLE COL**: *Mottle colour using Munsell notation.*

3. **MOTTLE ABUN**: Mottle abundance, expressed as a percentage of the matrix or surface described:

F: few <2% **C:** common 2-20% **M:** many 20-40% **VM:** very many 40% +

4. **MOTTLE CONT:** Mottle contrast:

F: faint - indistinct mottles, evident only on close inspection
D: distinct - mottles are readily seen
P: prominent - mottling is conspicuous and one of the outstanding features of the horizon

5. **PED. COL**: Ped face colour using Munsell notation.

6. **GLEY:** If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

7. **STONE LITH**: *Stone Lithology - one of the following is used:*

HR:	all hard rocks and stones	**FSST:**	soft, fine grained sandstone
ZR:	soft, argillaceous, or silty rocks	**CH:**	chalk
MSST:	soft, medium grained sandstone	**GS:**	gravel with porous (soft) stones
SI:	soft weathered igneous/metamorphic rock	**GH:**	gravel with non-porous (hard) stones

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

8. **STRUCT**: the degree of development, size and shape of soil peds are described using the following notation:

Degree of development	**WK**:	weakly developed	**MD**:	moderately developed
	ST:	strongly developed		
Ped size	**F**:	fine	**M**:	medium
	C:	coarse		
Ped shape	**S**:	single grain	**M**:	massive
	GR:	granular	**AB**:	angular blocky
	SAB:	sub-angular blocky	**PR**:	prismatic
	PL:	platy		

9. **CONSIST**: Soil consistence is described using the following notation:

L: loose	**FM**: firm	**EH**: extremely hard
VF: very friable	**VM**: very firm	
FR: friable	**EM**: extremely firm	

10. **SUBS STR**: Subsoil structural condition recorded for the purpose of calculating profile droughtiness: **G**: good **M**: moderate **P**: poor

11. **POR**: Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.

12. **IMP**: If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.

13. **SPL**: Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

14. **CALC**: If the soil horizon is calcareous, a 'Y' will appear in this column.

15. Other notations:

APW:	available water capacity (in mm) adjusted for wheat
APP:	available water capacity (in mm) adjusted for potatoes
MBW:	moisture balance, wheat
MBP:	moisture balance, potatoes

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT		ALC	COMMENTS
1	TR01004600	HRT	SE	4	45		1	1	100	-13	112	5	3A				DR	2	I70 Prob 2 dr	
2	TR01104600	PGR	SW	3	25	25	4	3B		0		0					WE	3B		
3	TR00904590	PGR	SW	3	25	25	4	3B		0		0					WE	3B		
4	TR01004590	PGR			32		2	2	85	-28	85	-22	3B				DR	3B	I50 valley Qwe	
5	TR01104590	PGR	SW	3	0	22	4	3B		0		0					WE	3B		
6	TR01204590	PGR	SW	3			1	1	83	-30	83	-24	3B				DR	2	I50dry Prob2dr	
7	TR00804580	PGR	SW	1	30	53	3	3A		0		0					WE	3A		
8	TR00904580	PGR	SW	1	20	20	4	3B		0		0					WE	3B	Gault clay	
9	TR01004580	PGR			0	20	4	3B		0		0					WE	3B		
10	TR00904570	PGR			55		1	1	157	44	121	14	1					1	Brickearth	
11	TR01004570	PGR			45	45	3	3A		0		0					WE	3A		
12	TR00904560	PGR					1	1	139	26	112	5	2				DR	2		
1P	TR01104590	PGR	SW	3	0	23	4	3B	123	10	100	7	2				WE	3B	H2 adherent	
2P	TR00904560	PGR					1	1	138	25	111	4	2				DR	2		

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-23	MCL	10YR43						0	0	HR	4							Rushy nearby
	23-45	MCL	10YR54						0	0	HR	5		M					
	45-70	MCL	10YR53 43	10YR58	C			Y	0	0	HR	5		M					Imp 70, flints
2	0-25	MCL	10YR42						0	0	HR	4							
	25-45	HCL	10YR53	75YR58	M			Y	0	0	HR	8		P		Y			Tending clay
	45-70	C	25Y 53 63	75YR58	M			Y	0	0	HR	5		P		Y			
3	0-25	HCL	25Y 41						0	0	HR	3							
	25-60	C	25Y 61 63	10YR68	M			Y	0	0		0		P		Y			
4	0-32	MCL	10YR52	75YR58	C			Y	0	0	HR	2							
	32-50	HCL	25Y63	10YR58	C			Y	0	0	HR	2		M					Light hcl-not spl
5	0-22	HCL	10YR41	10YR56	C			Y	0	0	HR	2							
	22-35	C	25Y52	10YR56	C			Y	0	0		0		P		Y			
	35-65	C	05Y62	10YR56	M			Y	0	0		0		P		Y			
6	0-30	MCL	10YR43						0	0	HR	3							
	30-50	HCL	10YR54	10YR58	F				0	0	HR	5		M					Impen 50, dry
7	0-30	MCL	10YR52	10YR58	C			Y	0	0	HR	2							
	30-53	MCL	10YR53	10YR56	M			Y	0	0	HR	2		M					
	53-75	C	05Y 61 63	75YR58	M			Y	0	0		0		P		Y			
8	0-20	MCL	10YR32						0	0	HR	2							
	20-35	C	25Y52	10YR56	C			Y	0	0		0		P		Y			
	35-60	C	05Y62	10YR56	M			Y	0	0	HR	2		P		Y			
9	0-20	HCL	05Y 41	75YR56	M			Y	0	0	HR	2							
	20-70	C	25Y 63	10YR68	M			Y	0	0		0		P		Y			
10	0-25	MZCL	10YR43						0	0	HR	3							
	25-55	MZCL	10YR53 54						0	0	HR	2		M					
	55-120	MZCL	10YR53 54	10YR56	M			Y	0	0	HR	2		M					
11	0-25	MCL	10YR32						0	0	HR	2							
	25-45	MCL	10YR42	10YR58	F				0	0	HR	2		M					
	45-70	C	05Y 41	75YR56	M			Y	0	0	HR	2		P		Y			
12	0-25	MCL	10YR43						0	0	HR	2							
	25-50	MCL	10YR54						0	0	HR	4		M					
	50-90	SCL	10YR44 46						0	0	HR	4		M					
	90-120	LCS	25Y 54 44						0	0		0		M					
1P	0-23	HCL	10YR41	10YR56	C			Y	0	0	HR	2							
	23-40	C	25Y 62	10YR56	C			Y	0	0	HR	10	WKCSAB	FM	P	Y		Y	Adherent
	40-120	C	05Y 62 63	75YR58	M			Y	0	0		0	MDCAB	FM	P	Y		Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
2P	0-25	MCL	10YR42						0	0	HR	2						
	25-42	MCL	10YR54						0	0	HR	4	MDCSAB	FR	M			
	42-90	SCL	10YR44						0	0	HR	4	MDCSAB	FR	M			
	90-120	LCS	25Y 54 44						0	0		0			M			